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Conference Abstract

When Data Management Meets Project Management

Evgeniy Meyke ‡

‡ EarthCape OY, Helsinki, Finland

Corresponding author: Evgeniy Meyke (evgeniy@earthcape.com)

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Abstract

Complex projects that collect, curate and analyse biodiversity data are often presented with the challenge of accommodating diverse data types, various curation and output workflows, and evolving project logistics that require rapid changes in the applications and data structures. At the same time, sustainability concerns and maintenance overheads pose a risk to the long term viability of such projects.

We advocate the use of flexible, multiplatform tools that adapt to operational, day-to-day challenges while providing a robust, cost efficient, and maintainable framework that serves the needs data collectors, managers and users.

EarthCape is a highly versatile platform for managing biodiversity research and collections data, associated molecular laboratory data (Fig. 1), multimedia, structured ecological surveys and monitoring schemes, and more. The platform includes a fully functional Windows client as well as a web application. The data are stored in the cloud or on-premises and can be accessed by users with various access and editing rights. Ease of customization (making changes to user interface and functionality) is critical for most environments that deal with operational research processes. For active researchers and curators, there is rarely time to wait for a cycle of development that follows a change or feature request. In EarthCape, most of the changes to the default setup can be implemented by the end users with minimum effort and require no programming skills.

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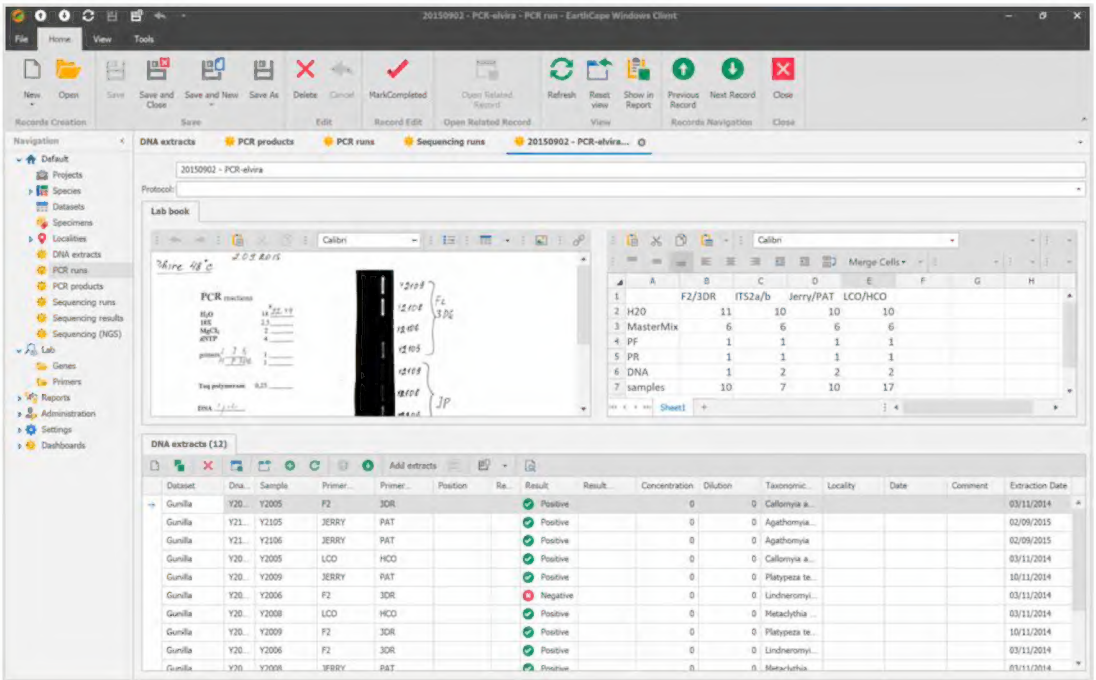

Figure 1.

EarthCape Windows Client Molecular Laboratory Screen.

High flexibility and a range of customisation options is complemented with mapping to Darwin Core standard and integration with GBIF, Geolocate, Genbank, and Biodiversity Heritage Library APIs. The system is currently used daily for rapid data entry, digitization and sample tracking, by such organisations as Imperial College, University of Cambridge, University of Helsinki, University of Oxford.

Being an operational data entry and retrieval tool, EarthCape sits at the bottom of Virtual Research Environments ecosystem. It is not a software or platform to build data repositories, but rather a very focused tool falling under "back office" software category. Routine label printing, laboratory notebook maintenance, rapid data entry set up, or any other of relatively loaded user interfaces make use of any industry standard relational database back end. This opens a wide scope for IT designers to implement desired integrations within their institutional infrastructure. APIs and developer access to core EarthCape libraries to build own applications and modules are under development.

Basic data visualisation (charts, pivots, dashboards), mapping (full featured desktop GIS module), data outputs (report and label designer) are tailored not only to research analyses, but also for managing logistics and communication when working on (data) papers. The presentation will focus on the software platform featuring most prominent use cases from two areas: ecological research (managing complex network data digitization project) and museum collections management (herbarium and insect collections).

Keywords

collection management, software, database, research data, molecular laboratory, GIS, mapping, species, taxonomy, labels, museum, natural history, ecology, data management

Presenting author

Evgeniy Meyke

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Author contributions

Evgeniy Meyke is a lead software developer of EarthCape and prepared the presentation